REMARKS

Claims 1-18 are pending in this application, of which claims 1, 2, 3, 4, 5, 7, 8, 9, 10, 11 and 13-18 have been amended. No new claims have been added.

Specification:

The Specification has been objected to due to minor informalities. Applicants respectfully submit that the amendments to the specification obviate the above objection. Accordingly, withdrawal of the objection to the specification is respectfully solicited.

Claim Objections:

Claims 1-6 and 8-18 have been objected for the specific reasons set forth in item 3, pages 2 and 3 of the outstanding Action. Applicants respectfully submit that the amendments to claims 1-5, 7-11 and 13-18 overcome the above objection. Accordingly, withdrawal of the objection to claims 1-6 and 8-18 is respectfully solicited.

As To The Merits:

As to the merits of this case, the Examiner sets forth the following rejections:

1) claims 1-6 are rejected under 35 U.S.C. §102(b) as being anticipated by **Kaneko** (U.S. Patent No. 5,792,953); and

2) claims 7-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watson** (U.S. Patent No. 4,601,206).

Both of these rejections are respectfully traversed.

With regard to **Kaneko**, a voltage is applied to a piezoelectric element to vibrate the element, and an acceleration applied to a weight deforms a vibrator, thereby generating a potential difference between front and rear piezoelectric elements, and the potential difference is detected.

This is in contrast to the present claimed invention, wherein a transducer (piezoelectric element) is not driven, and a twist is caused by an external force or momentum, and force of the twist or distortion is detected. That is, a twist of a cantilever shaft is detected.

In other words, in **Kaneko**, a piezoelectric element attached to a vibrator is driven, and a change in a force when acceleration is applied is detected by the piezoelectric element. That is, a binding of a cantilever beam is detected.

Thus, in the present claimed invention, only detection is performed and thus a drive circuit is not required. The simple constitution saves cost, and application of the principle of leverage simplifies the design of a sensor.

With regard to **Watson**, a pair of accelerometers permits rotation acceleration and acceleration to be detected separately. More specifically, the outputs of sensor 1, supported at the center of gravity, and sensor 2, supported at the center of gravity, are added to detect the acceleration in the sensitive direction; and the difference between sensor 1 and sensor 2 is used to detect the rotary acceleration about an orthogonal axis.

In contrast, in the present claimed invention, an angular velocity sensor is used as a sensor, wherein a sensor is supported at a position intentionally deviated from the center of gravity. That is, a rotation angular velocity, not a rotation acceleration, is output. More specifically, the output of sensors 1 and 2 are summed to detect the rotation angular velocity, and not a rotation acceleration. Moreover, the difference between sensors 1 and 2 is used to detect the acceleration.

In addition, sensors 1 and 2 may be disposed at a small distance, whereas **Watson** requires that the two sensors are positioned at a long distance from each other or equal distances from the center.

Thus, for at least these reasons, it is respectfully asserted that the prior art fails to teach or suggest recitations of claims 1 - 18, and request that the Examiner allow these claims, along with the entire application, to issue. Accordingly, withdrawal of the rejection of claims 1-18 under 35 U.S.C. §102 and §103(a) is respectfully solicited.

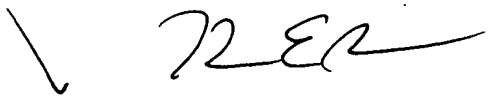
If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made**."

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees which may be due with respect to this paper, may be charged to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN, HATTORI, McLELAND & NAUGHTON, LLP



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please replace the paragraph beginning at page 10, line 1, with the following rewritten paragraph:

FIGS. 6a and 6b are [is an] explanatory drawings that show a state of a tuning-fork-type vibrator at the time of detecting acceleration.

IN THE CLAIMS:

Please amend claims 1, 2, 3, 4, 5, 7, 8, 9, 10, 11 and 13-18 as follows:

1. (Amended) An acceleration sensor for detecting [an] acceleration, comprising;

a [vibrator] transducer;

a weight portion that is connected to the [vibrator] transducer, and supported at a position different from the center of gravity of the [vibrator] transducer [plus its own structure] and the acceleration sensor; and

a detecting section which detects the amount of characteristic corresponding to an angular moment that is exerted in the [vibrator] transducer upon application of an acceleration in one direction to the [vibrator] transducer and the weight portion,

wherein a face of the transducer is made flush with a face of the weight portion.

2. (Amended) The acceleration sensor according to claim 1 wherein the [vibrator] transducer is provided as a torsion vibrator made by a piezoelectric element, and the amount of characteristic is a voltage in the torsion vibrator corresponding to the angular moment.

3. (Amended) The acceleration sensor according to claim 1, wherein the [vibrator] transducer comprises two piezoelectric elements which are mechanically connected to each other and are subjected to sliding deformation.

4. (Amended) An acceleration sensor for detecting [an] acceleration, comprising;

a [vibrator] transducer;

a weight portion that is connected to the [vibrator] transducer, and supported at a position different from the center of gravity of the [vibrator] transducer [plus its own structure] and the acceleration sensor; and

a detecting section which detects a Coriolis force that caused by a rotation angular velocity exerted in the [vibrator] transducer upon application of an acceleration in one direction to the [vibrator] transducer and the weight portion while the [vibrator] transducer is vibrating in a constant direction,

wherein a face of the transducer is made flush with a face of the weight portion.

5. (Amended) The acceleration sensor according to claim 4, wherein

[the] a rotation axis of the rotation angular velocity is set in the same direction as [the] a detection axis of the Coriolis force.

7. (Amended) An acceleration sensor for detecting [an] acceleration, comprising:

a first sensor having a first vibrator supported at a position, with the center of gravity thereof being different from the position at which the first [vibrator] transducer is supported, wherein, upon application of an acceleration in one direction, a rotation angular velocity is exerted in the first [vibrator] transducer;

a second sensor having a second [vibrator] transducer supported at a position, with the center of gravity thereof being the same as the position at which the second [vibrator] transducer is supported, wherein, upon application of an acceleration in one direction, no rotation angular velocity is exerted in the second [vibrator] transducer; and

a differential detector which detects a difference between outputs of the first sensor and the second sensor as to confirm a state of linear motion.

8. (Amended) The acceleration sensor according to claim 7, wherein

[the] a rotation axis of the rotation angular velocity of the first sensor and [the] a rotation axis of the rotation angular velocity of the second sensor are set in the same direction.

9. (Amended) The acceleration sensor according to claim 7, wherein the characteristic of the first [vibrator] transducer and the characteristic of the second [vibrator] transducer are coincident with each other.

10. (Amended) The acceleration sensor according to claim 8, wherein the characteristic of the first [vibrator] transducer and the characteristic of the second [vibrator] transducer are coincident with each other.

11. (Amended) The acceleration sensor according to claim 7, wherein a plurality of sets, each of said sets [which] comprises the first sensor, the second sensor and the differential detector are provided.

13. (Amended) The acceleration sensor according to claim 9, wherein a plurality sets, each of said sets [which] comprises the first sensor, the second sensor and the differential detector are provided.

14. (Amended) The acceleration sensor according to claim 10, wherein a plurality of sets, each of said sets [which] comprises the first sensor, the second sensor and the differential detector are provided.

15. (Amended) The acceleration sensor according to claim 11, wherein [three sets each of which consists of the first sensor, the second sensor and the differential detector are provided,] the sets [being] are arranged so that [the] detection directions for acceleration in the respective sets are made orthogonal to each other.

16. (Amended) The acceleration sensor according to claim 12, wherein [three sets each of which consists of the first sensor, the second sensor and the differential detector are provided,] the sets [being] are arranged so that [the] detection directions for acceleration in the respective sets are made orthogonal to each other.

17. (Amended) The acceleration sensor according to claim 13, wherein [three sets each of which consists of the first sensor, the second sensor and the differential detector are provided,] the sets [being] are arranged so that [the] detection directions for acceleration in the respective sets are made orthogonal to each other.

18. (Amended) The acceleration sensor according to claim 14, wherein [three sets each of which consists of the first sensor, the second sensor and the differential detector are provided,] the sets [being] are arranged so that [the] detection directions for acceleration in the respective sets are made orthogonal to each other.